

ABSTRACT OF THE DISCLOSURE

The present invention provides a modular high repetition rate ultraviolet gas discharge laser light source for a production line machine. The system includes an enclosed and purged beam path for delivery the laser beam to a desired location such as the entrance port of the production line machine. In preferred embodiments, the production line machine is a lithography machine and two separate discharge chambers are provided, one of which is a part of a master oscillator producing a very narrow band seed beam which is amplified in the second discharge chamber. This MOPA system is capable of output pulse energies approximately double the comparable single chamber laser system with greatly improved beam quality. A pulse stretcher more than doubles the output pulse length resulting in a reduction in pulse power (mJ/ns) as compared to prior art laser systems. This preferred embodiment is capable of providing illumination at a lithography system wafer plane which is approximately constant throughout the operating life of the lithography system, despite substantial degradation of optical components.